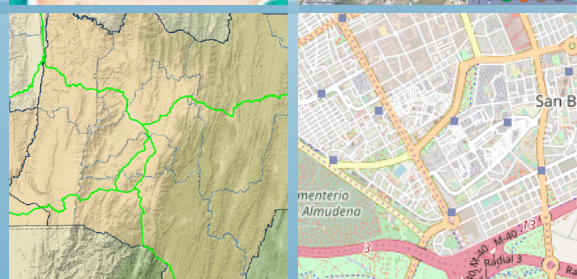
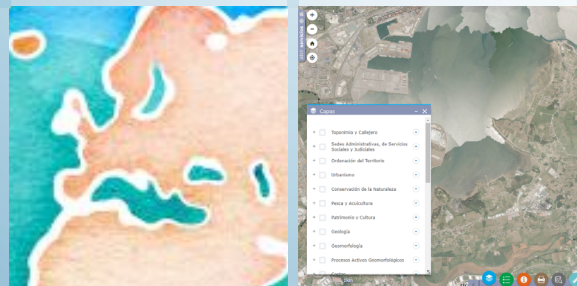
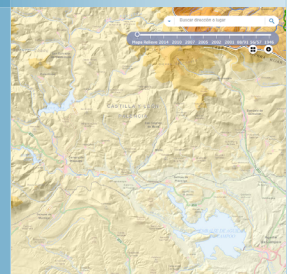
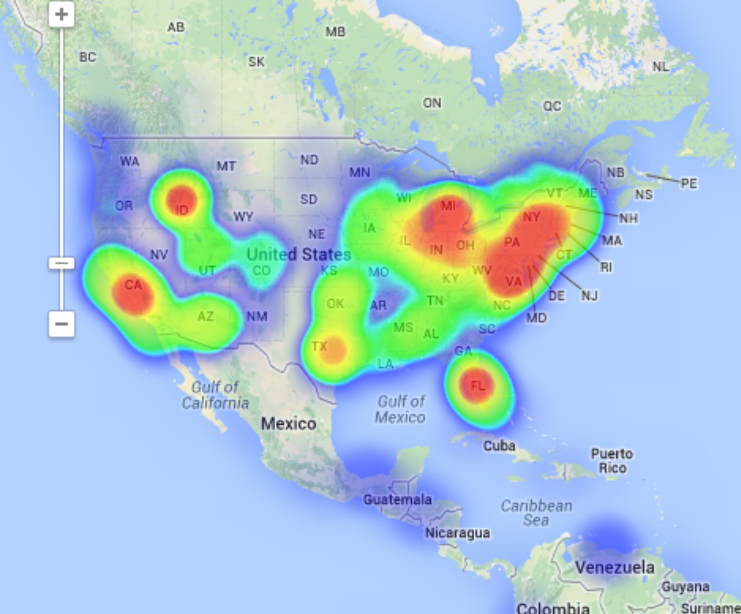
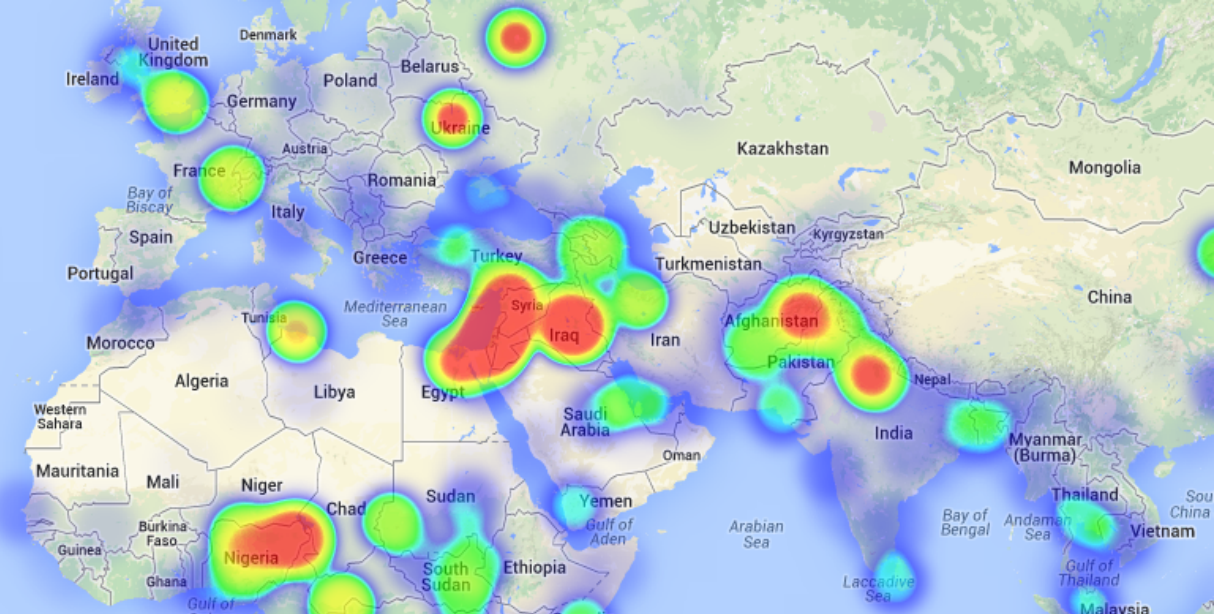


# DEVELOPMENT OF WEB BASED GIS APPLICATIONS USING OPEN LAYERS AND LEAFLET ONLINE TRAINING





North Atlantic Ocean



## COURSE

The course offers a complete introduction to web programming for GIS applications. You will learn how to develop web mapping applications and share your spatial data information to the rest of the world. The training material its focused on the latest open access tools, which minimize the development costs, providing the same performance and integration as the main commercial solutions.

During the course, the student will learn through a series of guided exercises, how to develop a map viewer from scratch and how to handle and loading different types of data, available on the web or created by them. As only free and open source development tools are used, the learning process being accessible for everyone.

At the end of the course the students will acquire enough information that will allow them to develop and manage their own Web GIS infrastructure along with their applications. From the implementation of a map server, to the development of cartographic viewers with different purposes, this course will provide all the necessary skills for manage the best online mapping tools for web developers.

## GOALS

- Offer an overview about Web GIS mapping applications, a practice in a continuous expanding.
- Learn about the most popular open source tools used in Web GIS development: Open Layers and Leaflet.
- Gain the necessary programming skills for the development of Web GIS applications.
- Manage a map server in order to create your own services for accessing geographic data.
- Acquire knowledge about spatial databases, how they store information and how you can access it for your own Web GIS applications.

## PROFILES

The course is aimed at professionals of the GIS world who, with knowledge or not of programming, want to know all the possibilities that programming with Open Source Software offers.



## METHODOLOGY

Our online courses, are distributed via Moodle, the world's most popular learning platform. It is a highly flexible Learning Management System that can be used to conduct and access courses, accomplish tasks of practical exercises, interact face-to-face to the teaching staff or benefit of support and resources at any time.

The online platform can be accessed 24 hours a day, in which the student will be able to ask for help at any given moment. The instructors will act as supervisors during all the training process, offering support for any possible difficulty encountered by the students along the course.

The course is structured in different modules, making it easy for the student to search for training material, download information, complete practical exercises and take assessments in order to verify their new gained abilities. The instructors will assist the students throughout all the course period, offering progressive help and information according to their evolution.



## INSTRUCTORS



### Isaac Perez

holds a Bachelor Degree in Geology at University of Granada and has more than 14 years of experience in the field of GIS and groundwater studies. His Master Degree in Web GIS applications and abilities in handling tools like JavaScript APIs, Open Layers, Google, Python and ArcGIS recommend him as one of the best expert in web programming and development for GIS applications.



### Beatriz Ramos López

Beatriz holds a Bachelor Degree in Biology at University of Sevilla, a Master in Geographic Information Systems and another one in Geographic Information Technologies, both of them at the University of Alcala. She has experience in the execution of Web GIS related projects, in the usage of open source software products and in the development of cartographic viewers.





## INTRODUCTION TO WEB GIS CONCEPT

WEB GIS application concept. Client - Server architecture

APIs for the development of Web GIS applications

Open source web GIS tools: Open layers and Leaflet

Map servers

OGC Standards

## PROGRAMMING WITH JAVASCRIPT

Basic concepts of HTML, CSS and Javascript

Getting familiar with Web GIS development environment

How to develop your own application

Debugging tools

Notions about Responsive Web Design

## APP DEVELOPMENT WITH OPEN LAYERS

Introduction to Openlayers

Creating your first web map

Working with vector and raster layers

- Vector layers, WFS services
- Raster layers, WMS services
- Layers Symbology

Adding controls to the map

Interact with map elements



## APP DEVELOPMENT WITH LEAFLET

Introduction to Leaflet

Creating your first web map

Working with vector and raster layers

- Vector layers, WFS services
- Raster layers, WMS services
- Layers Symbology

Interact with map elements

Leaflet plugins

## GEOSEVER

Introduction

Installation, available options

Graphic interface

Add data

WMS services

WFS services

Layer styles

Data filtering

First steps with GeoWebCache

Increase GeoWebCache performance

Security basic concepts

Integration with OpenLayers and Leaflet



## POSTGIS

Introduction Relational database management systems

Introduction to SQL (standard language for accessing and manipulating databases)

Concepts about spatial databases

- Spatial data types
- PostgreSQL/PostGIS: your open source spatial database

PostGIS - install and configure

Set users and permissions

Create a PostGIS database

How to load spatial data

Spatial query in QGIS

Basic geoprocessing in PostGIS

Integration with Geoserver and Web Mapping Applications

**DEVELOP A WEB GIS MAPPING APPLICATION WITH AN API OF YOUR CHOICE, GEOSEVER AS A MAP SERVER AND POSTGIS AS A SPATIAL DATABASE CONTAINER.**





# GIS Course.com

 (+34) 910 325 482

 [training@tycgis.com](mailto:training@tycgis.com)

Calle Fuencarral 158,  
Entreplanta, Oficina 16-17  
28010 Madrid

TYC GIS MÁLAGA  
Avda. Pintor Joaquin Sorolla 137, 1º D  
29017 MÁLAGA

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TYC GIS MÉXICO  
Tequesquitengo 4, Fracc. Cuaunáhuac  
C.P. 62450,  
Cuernavaca, Morelos.

TYC GIS PANAMÁ  
Calle Eusebio A. Morales  
El Cangrejo  
PH Neo Plaza Oficina 2015